

of a copolymer containing 60 wt% or more of acrylonitrile and 40 wt% or less of methyl methacrylate."

The Office Action admits that Noguchi and Nagata do not disclose the above-cited resin composition recited in Applicants' claim 12. The Office Action asserts that Slykhouse cures the deficiencies of Noguchi and Nagata by teaching this composition. The Office Action asserts that the reason one would combine Slykhouse with Noguchi is that Slykhouse teaches the predictable improvement of the distribution of discrete gas bubbles.

The Office Action asserts that the foamed resin creates pores. The Office Action asserts that Slykhouse's method of using a foamed resin to "improve the distribution of discrete gas bubbles" (Slykhouse, at col. 1, lines 56-64) in a material would inherently result in the distribution of "pores" throughout the material, and therefore inherently improve the porosity of Noguchi.

However, inherency requires "necessity," and not merely "possibility." Slykhouse fails to cure the deficiencies of Noguchi. One of ordinary skill in the art understands porosity as the percentage of volume of a solid taken up by voids within the solid, i.e., ratio of the total amount of empty space to the total amount of filled space. As such, the Office Action's assertion of increased dispersion of pore forming material, which creates the empty space, should not affect the total volume of pore forming material added. Increased dispersion merely affects the locations of the empty space, but does not increase the quantity of pore forming material used. Further, it has not been shown that improving the dispersion of gas bubbles would necessarily increase or improve the porosity in Noguchi, as alleged by the Office Action, because it does not necessarily increase the total amount of empty space. Therefore, Slykhouse fails to cures the deficiencies of Noguchi.

In addition, the range recited in "a resin of an outer shell of the foamed resin is constituted of a copolymer containing 60 wt% or more of acrylonitrile and 40 wt% or less of

methyl methacrylate" is critical. Specifically, the table on page 15 of Applicants' specification discloses five examples where the foamed resin amount of acrylonitrile (AN) is at least 60% and two counter examples where the AN range is 50%. In the examples, the methyl methacrylate (MMA) range is at most 40%. The examples show gas weight decrease ratios of less than 30%, as recited in claim 1. In contrast, in the counter examples, the MMA range is 50%. The counterexamples have gas weight decrease ratios of 64%, which cannot corresponds to the recited "less than 30%" amount.

The Office Action asserts that Slykhouse discloses a foamed resin shell made of MMA/AN copolymer comprising 10-90% AN. Slykhouse fails to appreciate the criticality of this range because it does not teach the recited range with sufficient specificity, nor would it have rendered obvious the recited range. See MPEP §2131.03(II). The asserted range of Slykhouse is so broad so as to encompass a very large number of possible distinct compositions such that one of ordinary skill in the art would not have predictably tried the recited range with any expectation of success for the asserted modification. See MPEP 2144.05 (I and III). Thus it would not have been obvious to combine Noguchi and/or Nagata with Slykhouse for this feature. As shown above, the range is critical and yields unexpected results, which rebuts the Office Action's prima facie case of obviousness.

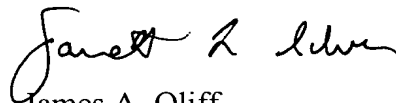
For at least the above reasons, the applied references do not disclose or render obvious the subject matter recited in claims 12, and claims 17, 18, 20, 22, 24, 26, 28 and 30 depending therefrom. Also, one of ordinary skill would not have had any reason to combine the teachings of the references, as asserted in the Office Action.

Accordingly, withdrawal of the rejection of claims 12, 17, 18, 20, 22, 24, 26, 28 and 30 under 35 U.S.C. §103(a) is respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 12, 17, 18, 20, 22, 24, 26, 28 and 30 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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